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## GREAT BRITAIN.

*Sleeping sickness and the trypanosoma in Uganda, Africa.*

Consul Halstead reports from Birmingham November 11 to the Department of State as follows:

The London Times prints an abstract of the report of Lieut. Col. David Bruce, R. A. M. C., F. R. S., of important observations he made while in Uganda on the etiology of sleeping sickness.

By the advice of the Royal Society Colonel Bruce was sent to superintend a second investigation into this disease, a previous commission having been sent out by the Royal Society. Some conception of the ravages wrought by this disease in the native population of Uganda may be formed from the conditions of the Buvuma Island, the population of 22,000 having been reduced to 8,000 by the disease, and the province of Busoga having been in the southern parts almost depopulated. Doctor Castellani, of the previous commission, having remained at work, met Colonel Bruce and his party on their arrival on March 16. He had observed in five cases of sleeping sickness trypanosomes in the cerebro-spinal fluid and in one case in the blood. Doctor Castellani thought at the time that this parasite was an accidental concomitant with no causal relationship to the disease.

Nevertheless the observation was of the greatest importance to the further investigations, and as soon as it was reported to Colonel Bruce, whose well-known investigations into the tsetse-fly disease in South Africa had given him a special familiarity with this genus of parasite, the whole party, with the most valuable and willing assistance of Doctor Moffat, the principal medical officer, and his assistant medical officer, addressed themselves with ardor to the pursuit of this line of investigation, with the result that by the first week in April, the date of Doctor Castellani's departure from Uganda for England, out of 34 cases of the sickness examined 70 per cent were found to have this parasite in the cerebro-spinal fluid, whereas control cases of patients under treatment for other diseases in the native hospital, when examined in the same way, showed no trypanosomes in the cerebro-spinal fluid. The further progress of the investigation increased this proportion to 100 per cent of the cases examined, in all of which the parasite was now found not only in the cerebro-spinal fluid, but also in the circulating blood, pointing to the very strong probability (as telegraphed to the Royal Society by Colonel Bruce at the beginning of April) that this trypanosome was the cause of the disease. A series of carefully controlled and minutely observed experiments was carried out by Bruce, Nabarro, and Grieg, in the course of which it was discovered that monkeys inoculated with cerebro-spinal fluid from sleeping-sickness patients or with blood from natives not as yet showing symptoms of sleeping sickness, but containing a similar parasite, sickened and died with all the symptoms of sleeping sickness.

From the analogy of the closely related disease, in cattle, the nagana or tsetse-fly disease of South Africa, it was suspected that in sleeping sickness a like method of infection took place. Along the lake shore numbers of a tsetse fly (*Glossina palpalis*) were found, and it was demonstrated by experiment that not only were these flies, fed on sleeping-sickness cases, capable of conveying the disease to healthy monkeys, but that the freshly caught flies from an infected area, without any artificial feeding, were also capable of conveying the disease.

It was further discovered by a carefully organized investigation, in which the native regents of the protectorate rendered valuable assistance, that this fly, like its congener, the tsetse fly of South Africa, is confined to well-defined areas, and that these areas correspond absolutely with the distribution of sleeping sickness, whereas in regions where no *Glossina palpalis* is found, although other biting flies abound, there is no sleeping sickness.

Moreover, an examination of a large number of individuals in the sleeping sickness areas and the nonsleeping sickness areas, respectively, revealed the fact that while a large percentage of the inhabitants of the sleeping sickness areas have in their blood the trypanosoma already referred to, in not a single case taken from inhabitants of nonsleeping sickness areas was this parasite found.

These investigations, therefore, point to the conclusion that sleeping sickness is caused by the entrance into the blood, and thence into the cerebro-spinal fluid, of a species of trypanosoma (probably the trypanosoma Gambiense discovered by Ford and described by Dutton), which is transmitted from the sick to the healthy by a species of tsetse (*Glossina palpalis*), and by it alone; that in short, sleeping sickness is a human tsetse fly disease.